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## **Barrier Beach: A Resource With a Purpose**

By THE DUXBURY BEACH RESERVATION

Many responses to the recent Town of Duxbury planning survey suggested that Duxbury Beach is one of our main attractions. Not only is it an exceptional recreational and aesthetic resource but, more importantly, it is a functional barrier beach — a long narrow strip of sand with open water on one side and a protected bay on the other side. Even a casual visitor to Duxbury Beach will notice the ever-changing effects of wind, waves, and tides on the shore. This is the nature of a barrier beach. Because barrier beach systems are composed of sediments and sands that are easily eroded and transported by forces of wind and waves, the shape and contours of the beach are continually changing. Such changes are most dramatic after storm events. The erosional forces, together with the gradual rise in sea level, cause barrier beaches to move landward. For Duxbury Beach, this landward shift averages several inches per year.

As a natural breakwater, Duxbury Beach works hard to protect the delicate salt marshes and developed shores of the inner bay in the towns of Duxbury, Kingston, and Plymouth from the full erosive power of the sea. If this protective barrier were compromised or destroyed, storm waves would strike, damage, and possibly destroy vulnerable marshes and bayside properties. Destruction of this type has already been experienced in the Town of Chatham on Cape Cod when a violent winter storm in 1987 resulted in a quarter-mile break through the barrier beach. Within one year, the quarter-mile break widened to one mile.

It is very important to prevent this type of destruction on Duxbury Beach. Without human intervention, barrier beaches respond to storm damage by natural repair processes. Over time, dune vegetation will again appear, trap sand, and eventually rebuild the dune ecosystem. However, this natural repair process is impeded by man-made structures — sea walls, piers, and pavement — which interfere with the transport of sand to the barrier beach, a process that results in "sand starvation." Without a consistent influx of sand, even natural processes cannot rebuild the dunes. Because of "sand starvation" and because Duxbury Beach is also used extensively for recreation, it must be properly managed to minimize damage to the ecosystem and to ensure the kind of protection that this barrier beach provides our communities.

*(One of the Preservation Society's goals is to keep the public informed about issues and activities relating to Duxbury Beach.)*